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Notes on the Genus *Eusphalerum* (Coleoptera, Staphylinidae) from Aomori Prefecture, Japan

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Abstract Four species of the staphylinid genus *Eusphalerum* from the Bonju-san Mountains and Mt. Manokami-yama of Aomori Prefecture in northeastern Honshu are dealt with. Of these, three species are described as being new to science under the names *E.* (s. str.) *yamauchii*, *E.* (s. str.) *bonjuense* and *E.* (s. str.) *tsugaruense*, and the remaining one determined as *E.* (s. str.) *towadaense* is recorded with collecting data.

The members of the genus *Eusphalerum* are usually found on flowers and widely distributed throughout the world. Fourty-two species of the genus have hitherto been reported from Japan, including the Ryukyus, by SHARP (1874, 1889), FAUVEL (1901), BERNHAUER (1909), CAMERON (1930), CHÛJÔ and LAST (1958) and WATANABE (1990, 1993). From Aomori Prefecture, however, only four species have been reported until now by SHIMOYAMA *et al.* (1986, 1989, 1991) and YAMAUCHI (1996), though three of them were not determined to the species level.

Through the courtesy of Mr. Satoshi YAMAUCHI, I had an opportunity to examine a number of specimens belonging to the genus *Eusphalerum*. They are collected by himself on the Bonju-san Mountains and Mt. Manokami-yama of Aomori Prefecture in northeastern Honshu, Japan. As the result of careful examination, they are classified into four species belonging to two different species-groups. Two species belong to the group of *E.* (s. str.) *michinoku* and the other two species belong to the group of *E.* (s. str.) *japonicum*. Three of the four are new to science for reason of disagreement in the configuration of the male genital organ from the previously known species, and the remaining one is determined as *E.* (s. str.) *towadaense* Y. WATANABE (1990, p. 233). In this paper, I am going to describe the new species in addition to the collecting data of *E.* (s. str.) *towadaense*. The type specimens of the new species to be described are deposited in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture, except for some paratypes which are preserved in the collection of the Aomori Prefecturel Museum.

Before going further, I would like to express my hearty thanks to Dr. Shun-Ichi UÉNO, Visiting Professor at Tokyo University of Agriculture, for his kind advice on the present study. Deep gratitude is also due to Mr. Satoshi YAMAUCHI, the Aomori Prefectural Museum, for his kindness in submitting invaluable specimens to me for taxo-

nomic study, and to Mr. Koji ARAI, Ranzan, Saitama, for his assistance in drawing the habitus illustration inserted in this paper.

Eusphalerum (s. str.) ***yamauchii*** Y. WATANABE, sp. nov.

[Japanese name: Yamauchi-hanamuguri-hanekakushi]

(Figs. 1–4)

Body length: 2.7–3.0 mm (from front margin of head to anal end); 1.9–2.0 mm (from front margin of head to elytral apices).

Body elliptical and moderately convex medially. Colour blackish and shining, except for head and pronotum which are somewhat dull, with mouth parts, five or so proximal segments, elytra, terminal abdominal segment and legs yellow.

Male. Head subtrapezoidal and depressed above, narrowed anteriad in front of eyes, remarkably broader across compound eyes than long (width/length=1.86); postocular part very short, about one-fourth as long as the longitudinal diameter of each eye, which is prominent; surface sparingly, finely though distinctly punctured and covered with coriaceous ground sculpture, provided with a shallow depression inside each antennal tubercle, and with also a vague small fovea just before each ocellus; ocelli relatively small, the distance between them somewhat larger than that from the outside of ocellus to the inner margin of each eye. Antennae fully extending to posterior margin of pronotum, somewhat thickened towards the apicalmost segment, with five proximal segments polished and the remainigs opaque, 1st segment robust, distinctly longer than broad (length/width=1.80), 2nd constricted at the base, nearly 1.5 times as long as broad, apparently shorter (2nd/1st=0.71) and narrower (2nd/1st=0.88) than 1st, 3rd dilated apicad, apparently longer than broad (length/width=1.75), somewhat longer (3rd/2nd=1.09) though slightly narrower (3rd/2nd=0.91) than 2nd, 4th to 7th equal in length to one another, 4th almost as long as broad, evidently shorter (4th/3rd=0.57) than though as broad as 3rd, 5th globular though slightly transverse (width/length=1.10), slightly broader than 4th (5th/4th=1.10), 6th to 10th gradually increasing in width, each distinctly transverse, 11th semioval, apparently longer than broad (length/width=1.43), twice as long as though as broad as 10th, bluntly pointed at the apex.

Pronotum convex medially and transverse (width/length=1.50), a little broader than head (pronotum/head=1.15), widest at the middle and slightly more strongly narrowed posteriad than anteriad; lateral margins finely bordered, gently arcuate in anterior halves and almost straight in posterior halves, anterior margin feebly emarginate at the middle, posterior margin nearly straight though slightly emarginate at the middle, anterior angles narrowly rounded, posterior ones obtuse; surface covered with similar punctures and ground sculpture to those of head, provided with a shallow and narrow depression in posterior half just inside each lateral margin. Scutellum subtriangular, impunctate though covered with extremely fine coriaceous ground sculpture on the surface. Elytra subtrapezoidal and dilated posteriad, a little longer than broad (length/width=1.10), considerably longer (elytra/pronotum=2.30) and broader (ely-

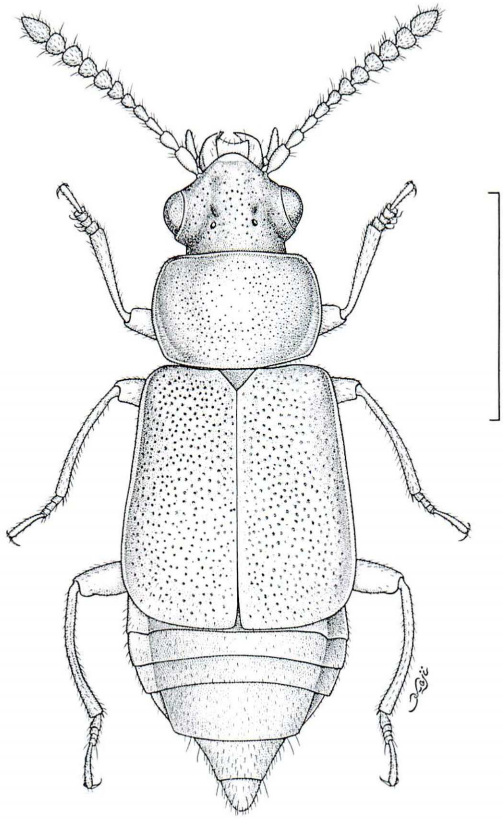


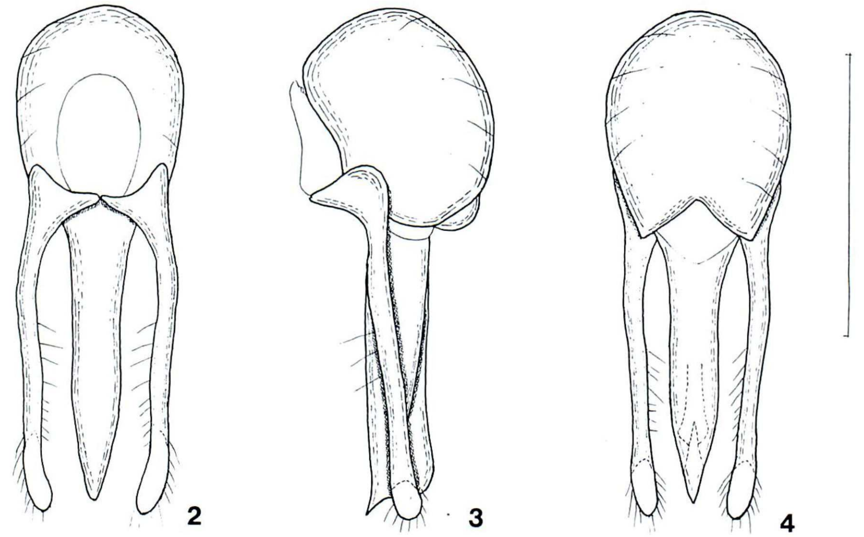
Fig. 1. *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE, sp. nov., ♂, from Sawauchizawa of the Bonju-san Mountains of Aomori Prefecture, Japan. Scale: 1.0 mm.

tra/pronotum=1.40) than pronotum, posterior margin feebly arcuate, posterior angles broadly rounded; surface densely, coarsely punctured and covered with extremely fine ground sculpture. Legs moderately long, protarsus not dilated; mesotibia dilated and incurved in apical half; apical segment of metatarsus relatively long, distinctly longer than the four preceding segments together.

Abdomen abruptly narrowed from the 5th segment to the apical end; surface of each tergite almost impunctate though covered with microscopic ground sculpture; 8th sternite deeply, semicircularly excised at the middle of posterior margin.

Genital organ trilobed and symmetrical. Median lobe nearly parallel-sided in basal two-thirds and then abruptly narrowed at the apex which is bluntly pointed. Parameres elongate and somewhat longer than median lobe; each paramere provided with a number of setae at median part of inner margin and with more numerous and much finer setae on outer-apical margin.

Female. Unknown.



Figs. 2–4. Male genital organ of *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE, sp. nov.; dorsal view (2), lateral view (3), and ventral view (4). Scale: 0.5 mm.

Type series. Holotype: ♂, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 5–V–1995, S. YAMAUCHI leg. Paratype: 1 ♂, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Remarks. The present new species is similar in general appearance to *E.* (s. str.) *kaoru* Y. WATANABE (1990, p. 242), but can be distinguished from it by the following points: pronotum more convex medially, surface more sparsely and much more finely punctured; elytra more closely and more coarsely punctured though covered with less distinct ground sculpture. The male genital organ is also similar to that of *E. kaoru*, but differs from it in the configuration of the median lobe which is more elongate and parallel-sided in basal two-thirds.

Bionomics. The type specimens were found on wild flowers, either of *Adenocaulon himalaicum* or of *Anemone pseudo-altaica*, in a deciduous broadleaved forest at an altitude of 150 m.

Etymology. This new species is named after Mr. Satoshi YAMAUCHI, who kindly supplied me with the type specimens.

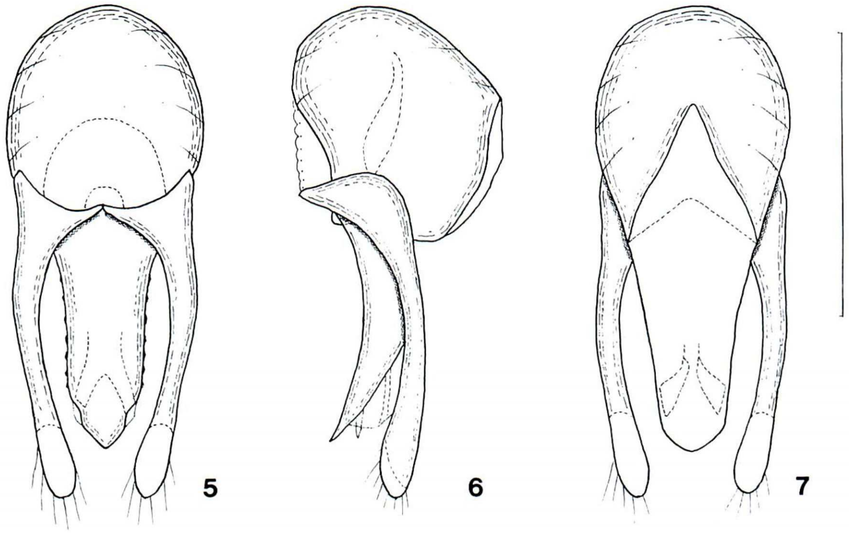
Eusphalerum (s. str.) ***bonjuense*** Y. WATANABE, sp. nov.

[Japanese name: Bonjusan-hanamuguri-hanekakushi]

(Figs. 5–7)

Body length: 2.1–2.2 mm (from front margin of head to anal end); 1.6–1.7 mm (from front margin of head to elytral apices).

Male and female. Similar in external features and colour to *E.* (s. str.) *michi-*



Figs. 5–7. Male genital organ of *Eusphalerum* (s. str.) *bonjusanum* Y. WATANABE, sp. nov.; dorsal view (5), lateral view (6), and ventral view (7). Scale: 0.25 mm.

noku described from Tachiyazawa of Yamagata Prefecture, but differs from it in the following points: head including compound eyes less transverse (width/length=1.72), surface covered with much finer punctures and somewhat finer coriaceous ground sculpture; pronotum transverse (width/length=1.33) as in *E. michinoku*, though more apparently broader than head (pronotum/head=1.17), surface more finely punctured; elytra slightly longer than broad (length/width=1.06) and a little broader than pronotum (elytra/pronotum=1.46), surface covered with somewhat sparser, less coarse punctures and finer ground sculpture than those of *E. michinoku*.

Male genital organ decidedly different from that of *E. michinoku* in configuration. Median lobe relatively broad, slightly and gradually narrowed apicad, except near apical part which is abruptly narrowed towards the bluntly pointed tip, provided with a number of minute blackish granules on each lateral side. Parameres elongate and considerably longer than median lobe, each fringed with some fine setae at the apical part which is membraneous.

Type series. Holotype: ♂, allotype: ♀, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 5–V–1995, S. YAMAUCHI leg. Paratypes: 2♂♂, 3♀♀, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Bionomics. The type specimens were similarly obtained from wild flowers, either of *Adenocaulon himalaicum* or of *Anemone pseudo-altaica*, at the same collecting site as the preceding species.

Etymology. The specific epithet of the present new species is named after

"Bonju-san", the type locality.

Eusphalerum (s. str.) ***tsugaruense*** Y. WATANABE, sp. nov.

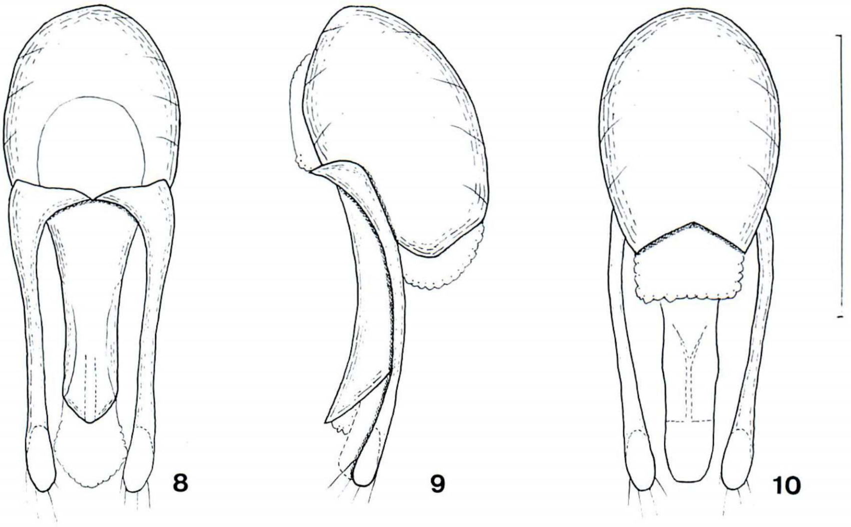
[Japanese name: Tsugaru-hanamuguri-hanekakushi]

(Figs. 8–10)

Body length: 2.3–2.6 mm (from front margin of head to anal end); 1.7–1.9 mm (from front margin of head to elytral apices).

Body gently convex and parallel-sided, covered with fine pubescence on the whole surface. Colour reddish brown and moderately shining, with mouth parts, six or so proximal segments of antennae, elytra and legs brownish yellow, abdomen blackish in male, and blackish brown in female.

Male and female. Similar in general appearance to *E.* (s. str.) *japonicum* (BERNHAUER, 1909), but differs from it in the more robust body, darker coloration, different configuration of male genital organ, and the following points: head more coarsely punctured and covered with more distinct coriaceous ground sculpture; pronotum slightly more convex medially and much braoder than head (pronotum/head=1.19), widest behind the middle and more strongly dilated anteriad than in *E. japonicum*, lateral margins more strongly emarginate in posterior halves, surface more distinctly punctured and covered with slightly coarser ground sculpture, inner side of each lateral margin more strongly depressed in posterior half; elytra almost parallel-sided, distinctly longer than broad (length/width=1.20), surface less densely and more deeply punctured.



Figs. 8–10. Male genital organ of *Eusphalerum* (s. str.) *tsugaruense* Y. WATANABE, sp. nov.; dorsal view (8), lateral view (9), and ventral view (10).

Male genital organ also similar to that of *E. japonicum* in having remarkably long parameres, but different from it in the following details: median lobe more parallel-sided except for apical part which is abruptly narrowed towards the narrowly rounded tip, dorsal surface provided with a fine longitudinal carina inside each lateral margin.

Type series. Holotype: ♂, allotype: ♀, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 3–V–2003, S. YAMAUCHI leg. Paratypes: 1♂, 4♀♀, same data as for the holotype.

Distribution. Japan (northeastern Honshu).

Bionomics. The type specimens were found on flowers of coltsfoot in a deciduous broadleaved forest at an altitude of 150 m.

Etymology. The spicific epithet of this new species is derived from "Tsugaru", in which province lies the type locality.

Eusphalerum (s. str.) ***towadaense*** Y. WATANABE

[Japanese name: Towada-hanamuguri-hanekakushi]

Eusphalerum (s. str.) *towadaense* Y. WATANABE, 1990, Mem. Tokyo Univ. Agric., **31**: 233.

This species was described by WATANABE (1990, p. 233) based on the specimens obtained from "Towada" of Aomori Prefecture. Later, YAMAUCHI (1996, p. 82) reported it from Kabenosawa and Menjazawa of the Bonju-san Mountains in Aomori Prefecture.

Specimens examined. 11♂♂, Menjazawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 9♂♂, 6♀♀, Kabenosawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 2♂♂, Sawauchizawa, Bonju-san Mts., Aomori Pref., Honshu, Japan, 2–V–1994, S. YAMAUCHI leg.; 290♂♂, 112♀♀, same locality and collector as above, 3–V–2003; 192♂♂, 103♀♀, Mt. Manokami-yama, Aomori Pref., Honshu, Japan, 7–V–2003, S. YAMAUCHI leg.

Distribution. Japan (northeastern Honshu).

Remarks. The specimens examined vary in colour which is often darkened in head and pronotum.

Bionomics. A large number of specimens were found on flowers of coltsfoot in deciduous broadleaved forests on two different mountains, the Bonju-san Mountains at an altitude of 150 m and Mt. Manokami-yama at an altitude of 480 m.

要　　約

渡辺泰明：青森県から採集されたハナムグリハネカクシ類について．—— 青森県下からはこれまでに4種のハナムグリハネカクシが記録されているが，そのうちの3種は種名まで確定されず，種名が明らかにされたのは1種のみであった．私は青森郷土資料館の山内智氏から，同氏によって青森県波岡町の梵珠山地および青森市の馬ノ神山で採集された多数のハナムグリハネカクシを検討する機会を得た．検討の結果，これらは4種に識別され，そのうちの1種は「十和田」から記載された *E. towadaense* Y. WATANABE で，他の3種はいずれも未記載種であった．

そこで，未記載種について下記のとおり命名・記載するとともに *E. towadaense* の採集データを記録した．

1. *Eusphalerum* (s. str.) *yamauchii* Y. WATANABE ヤマウチハナムグリハネカクシ

本種は梵珠山地の標高150mほどの沢内沢に自生していたフキ，またはキクザキイチリンソウの花から採集された．外部形態および色彩が *E. kaoru* Y. WATANABE に類似しているが，前胸背板はより強く隆起し，点刻がより疎でより細かいこと，翅鞘の点刻がより密でより粗いこと，雄交尾器の形状が著しく異なることなどによって容易に区別される．

2. *Eusphalerum* (s. str.) *bonjusanum* Y. WATANABE ボンジュサンハナムグリハネカクシ

前種と同様な環境から採集された種で，外部形態および色彩は *E. michinoku* Y. WATANABE に類似している．しかし，頭部の幅が相対的に狭く，表面の点刻と微細構造はより細かいこと，前胸背板はより幅広で，点刻が細かいこと，翅鞘の点刻の粗さはより弱く，微細構造がより細かいこと，また雄交尾器中葉の形状が明らかに異なることなどで区別される．

3. *Eusphalerum* (s. str.) *tsugaruense* Y. WATANABE ツガルハナムグリハネカクシ

本種も前記2種と同様，梵珠山地の沢内沢（標高150m地点）に自生していたフキの花から採集された．形態的概観は *E. japonicum* BERNHAUER に類似しているが，体がより強壮で，色彩は暗褐色を呈し，雄交尾器の中葉は両側がより平行に近く，各側縁の内側に細縦隆線が認められることなどによって区別される．

4. *Eusphalerum* (s. str.) *towadaense* Y. WATANABE トワダハナムグリハネカクシ

本種は，これまで原記載以後の報告がなかったが，今回梵珠山地および馬ノ神山から採集された個体を検したので記録した．なお，この種には，頭部および前胸背板の色彩が赤黄色から暗褐色を呈する個体が認められた．

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